

What Is Claimed Is:

1. A method for determining wheel lift of a wheel of an automotive vehicle comprising the steps of:

5 applying a change of torque to the wheel;  
measuring a change in a wheel condition since initiating the step of applying a change of torque;

10 indicating wheel lift if the change in the wheel condition is greater than a predetermined value.

2. A method as recited in claim 1 wherein the condition is one selected from the group of acceleration and speed.

15 3. A method as recited in claim 1 further comprising the step of removing the change of torque;  
measuring a second wheel condition after the step of stopping the changing torque.

20 4. A method as recited in claim 3 further comprising the step of determining whether the second wheel condition is above a threshold.

5. A method as recited in claim 1 wherein the step of applying a change of torque comprises applying a brake to the wheel.

25 6. A method as recited in claim 5 further comprising the step of releasing the brake;  
determining a wheel condition after the step of releasing the brake;

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when the wheel condition does not increase over a reacceleration threshold, confirming wheel lift;

5 when wheel speed condition increases over a reacceleration threshold, indicating wheel contact.

7. A method as recited in claim 1 wherein the step of applying a change of torque comprises applying engine torque.

8. A method for monitoring a 10 predetermined condition of an automotive vehicle having a plurality of wheels comprising the steps of:

determining a potential for the predetermined condition of the wheel;

measuring a first wheel speed;

15 thereafter, changing the torque of a suspected lifting wheel from a first torque to a second torque;

changing the torque from the vehicle from the second torque to the first torque;

20 measuring a second wheel speed;

determining a wheel speed change as a function of the first wheel speed and the second wheel speed;

25 when the change in wheel speed is greater than a reacceleration threshold, confirming the predetermined condition.

9. A method as recited in claim 8 wherein the predetermined condition is a function of roll angle, steering wheel angle, and road bank angle.

10. A method as recited in claim 8 wherein the step of changing the torque comprises the step of applying the brake.

11. A method as recited in claim 8 wherein 5 the step of changing the torque comprises the step of applying engine torque.

12. A method as recited in claim 8 wherein a predetermined condition comprises a sensor failure.

13. A method as recited in claim 8 wherein 10 the predetermined condition comprises wheel lift.

14. A method as recited in claim 8 further comprising the step of correcting lift by applying the brakes.

15. A method as recited in claim 8 further 15 comprising the step of correcting lift by applying a steering correction.

16. A method as recited in claim 8 further comprising the step of calculating a traction level.

17. A system for detecting lift of a wheel 20 of an automotive vehicle comprising:

a speed sensor coupled to the wheel producing a wheel speed signal;

a torque control system coupled to the wheel for changing the torque at the wheel;

25 a controller coupled to the said torque control system and the wheel speed sensor, said controller determining lift by changing the torque of the wheel, measuring a change in the wheel speed and

indicating lift in response to a predetermined change in wheel speed.

18. A method for determining wheel lift of a vehicle comprising the steps of:

5 applying a torque to the wheel by applying a brake torque;

increasing the brake torque to build until a maximum brake torque threshold is achieved;

10 detecting the change in wheel speed since the application of brake torque;

comparing the change in wheel speed to a threshold;

when the change in speed is above the wheel speed change threshold value, indicating wheel lift;

15 when the brake torque reaches a maximum value before the change in wheel speed reaches the threshold, holding the torque for a predetermined amount of time;

20 continuing to monitor the change in wheel speed during a hold duration;

determining a second change in wheel speed;

comparing the second wheel speed to the threshold value;

25 when the second wheel speed exceeds the threshold value during the hold duration, indicating a wheel lift.

19. A method as recited in claim 18 further comprising the steps of:

releasing the torque;

30 determining a wheel speed change;

when the wheel speed change is greater than a reacceleration threshold, indicating wheel contact;

when the wheel speed change is less than the threshold, confirming an indication of wheel lift.

20. A method as recited in claim 18 further comprising the step of calculating a traction level.

21. A method as recited in claim 18  
10 further comprising the step of when wheel lift is detected, continually monitoring the wheel speed change for a sudden increase to acknowledge wheel contact.